

WHAT IS CLAIMED IS:

1. An electrochemical cell comprising:
a cathode containing MnO_2 ;
an anode containing lithium; and
an electrolyte containing a bis(oxalato)borate salt,
wherein the cell includes an aluminum surface in electrical contact with a second metal surface, wherein the second metal surface is different from the aluminum surface.
2. The electrochemical cell of claim 1, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.
3. The electrochemical cell of claim 1, wherein the electrolyte contains a second salt.
4. The electrochemical cell of claim 3, wherein the second salt comprises a lithium salt.
5. The electrochemical cell of claim 1, wherein the second metal surface is a steel surface.
6. The electrochemical cell of claim 1, wherein the second metal surface is an aluminum or aluminum alloy surface.
7. The electrochemical cell of claim 1, wherein the second metal surface is a nickel surface.
8. The electrochemical cell of claim 1, wherein the cell includes a cathode current collector comprising aluminum.

9. The electrochemical cell of claim 1, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration that is equal to or less than about 0.2 M.

10. The electrochemical cell of claim 9, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.15 M.

11. The electrochemical cell of claim 10, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.1 M.

12. The electrochemical cell of claim 11, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.05 M.

13. The electrochemical cell of claim 12, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.025 M.

14. The electrochemical cell of claim 1, wherein the aluminum surface is a portion of an object having at least one dimension greater than 0.5 millimeter.

15. The electrochemical cell of claim 1, wherein the aluminum surface is a portion of an object having at least one dimension greater than one millimeter.

16. The electrochemical cell of claim 1, wherein the aluminum surface is a portion of an object having at least one dimension greater than two millimeters.

17. An electrochemical cell comprising:
a cathode containing an aluminum current collector;
an anode; and
an electrolyte containing a bis(oxalato)borate salt and a second salt comprising a lithium salt, wherein the cell is a primary electrochemical cell.

18. The electrochemical cell of claim 17, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.
19. The electrochemical cell of claim 17, wherein the cathode contains MnO_2 .
20. The electrochemical cell of claim 17, wherein the anode contains lithium.
21. The electrochemical cell of claim 17, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration that is equal to or less than about 0.2 M.
22. The electrochemical cell of claim 21, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.15 M.
23. The electrochemical cell of claim 22, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.1 M.
24. The electrochemical cell of claim 23, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.05 M.
25. The electrochemical cell of claim 24, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.025 M.
26. The electrochemical cell of claim 17, wherein the cell includes a case comprising aluminum.
27. The electrochemical cell of claim 26, wherein the case consists essentially of aluminum.
28. The electrochemical cell of claim 17, wherein the second salt comprises lithium trifluoromethanesulfonate or lithium trifluoromethanesulfonimide.

29. The electrochemical cell of claim 17, wherein the electrolyte further comprises a third salt comprising a lithium salt.

30. The electrochemical cell of claim 29, wherein the third salt comprises lithium trifluoromethanesulfonate or lithium trifluoromethanesulfonimide.

31. An electrochemical cell comprising:
a cathode containing MnO_2 ;
an anode containing lithium;
an aluminum surface; and
an electrolyte containing a bis(oxalato)borate salt at a concentration that is equal to or less than about 0.2 M.

32. The electrochemical cell of claim 31, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.

33. The electrochemical cell of claim 31, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.15 M.

34. The electrochemical cell of claim 33, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.1 M.

35. The electrochemical cell of claim 34, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.05 M.

36. The electrochemical cell of claim 35, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.025 M.

37. An electrochemical cell comprising:

a cathode containing MnO_2 ;
an anode containing lithium; and
an electrolyte containing a bis(oxalato)borate salt, wherein the cell is a primary electrochemical cell, and wherein the cell includes two pieces of aluminum in electrical contact with each other.

38. The electrochemical cell of claim 37, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.

39. An electrochemical cell comprising:
a cathode containing MnO_2 ;
an anode containing lithium; and
an electrolyte containing a bis(oxalato)borate salt at a concentration that is equal to or less than about 0.2 M,
wherein the cell is a primary cell.

40. The electrochemical cell of claim 39, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.

41. The electrochemical cell of claim 39, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.15 M.

42. The electrochemical cell of claim 41, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.1 M.

43. The electrochemical cell of claim 42, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.05 M.

44. The electrochemical cell of claim 43, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.025 M.

45. An electrochemical cell comprising:
a cathode containing MnO_2 ;
an anode containing lithium; and
an electrolyte containing a bis(oxalato)borate salt at a concentration of less than about 0.2 M.

46. The electrochemical cell of claim 45, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.

47. A method of inhibiting aluminum corrosion in an electrochemical cell, the method comprising:

- a. adding a bis(oxalato)borate salt to an electrolyte; and
- b. placing the electrolyte, an anode containing lithium, and a cathode containing an aluminum current collector into a cell case to form the cell, wherein the cell is a primary electrochemical cell.

48. The method of claim 47, wherein the bis(oxalato)borate salt comprises a member selected from the group consisting of lithium-bis(oxalato)borate, potassium-bis(oxalato)borate, and sodium-bis(oxalato)borate.

49. The method of claim 47, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration that is equal to or less than about 0.2 M.

50. The method of claim 49, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.15 M.

51. The method of claim 50, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.1 M.

52. The method of claim 51, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.05 M.

53. The method of claim 52, wherein the electrolyte contains the bis(oxalato)borate salt at a concentration of less than about 0.025 M.

54. The method of claim 47, wherein the cathode comprises MnO_2 .